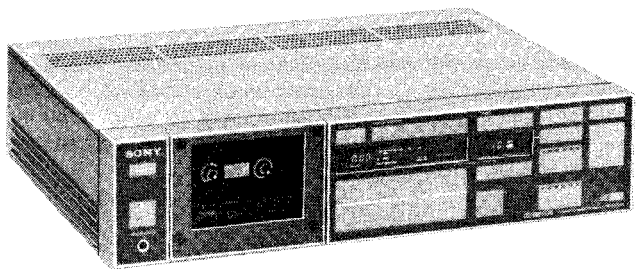
SONY®

STEREO CASSETTE DECK

TC-FX1010



OPERATING INSTRUCTIONS Page 2

Before operating the unit, please read this manual thoroughly.
This manual should be retained for future reference.

MODE D'EMPLOI Page 24

Avant toute opération, lire attentivement ce mode d'emploi.
Conserver ce manuel pour toute référence ultérieure.

BEDIENUNGSANLEITUNG Seite 46

Vor Inbetriebnahme lesen Sie bitte diese Bedienungsanleitung aufmerksam durch.
Bewahren Sie diese Anleitung zum späteren Nachschlagen gut auf.

MANUAL DE INSTRUCCIONES Página 68

Antes de manipular el aparato, lea este manual detenidamente.
Consérvelo para futuras referencias.

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English

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

For the Customers in the United Kingdom

Important
The wires in the mains lead are coloured in accordance with the following code:

Blue: Neutral
Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

TABLE OF CONTENTS

Operating voltage 3
Precautions 3
Function of controls 4
Connections 7
Playback 8
  Automatic tape select system 9
Recording 10
  Before recording 10
  To start recording 11
  More accurate recording starts 11
  To record a material onto a specific portion of tape 11
Self monitor 11
Recording and playback using the STATUS MEMORY function ... 12
Recording level adjustment 13
Using the digital linear counter 14
Auto play 15
Memory stop/play 15
Record muting 15
Erasing 15
Timer-activated recording and playback 16
Notes on cassettes 16
Maintenance 17
Specifications 18
Technical information 19
Trouble checks 22

FEATURES

ASP IC
A newly-developed ASP (Audio Signal Processor) IC and the TC-FX1010's built-in microcomputer have made it possible to replace all mechanical switches with electronic keys and to shorten and simplify the signal path.

Status memory function
The optimum recording and playback settings for particular program sources and particular tapes can be memorized and instantly retrieved.

Three-head system with S&F (Sendust and Ferrite) heads
Separate recording and playback heads provide extended frequency response. Good tape-to-head contact is assured by mounting the heads on a single block and adjusting each head separately for more precise azimuth alignment.

Dual-capstan tape drive
Two capstans and two pinch rollers ensure uniform tape tension and stable tape-to-head contact. As a result, wow and flutter and modulation noise are greatly reduced.

Automatic calibration
An automatic calibration system adjusts the bias current and the recording sensitivity for each particular cassette.

Self monitor function
The recording being made is monitored and the indicators warn if the recorded signal level is lower than the source signal level.

Dolby C-type noise reduction system
In addition to the conventional B-type Dolby NR system, the TC-FX1010 incorporates the newly-developed C-type Dolby NR system which is twice as effective in reducing noise as the B-type system. In the C-type system, an anti-saturation network extends the dynamic range in the high frequencies.

Automatic recording level attenuation
Any input level higher than the MOL (Maximum Output Level) is automatically attenuated during recording so that the recorded sound will not be distorted.

Adjustable MOL balance
You can adjust the bias current to suit the program source to be recorded.

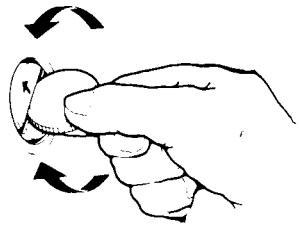
Digital linear counter
This counter can indicate the elapsed recording or playback time so that the tape can be accurately indexed. It can also indicate the remaining time left to record before the tape runs out.

Automatic tape type detection
When a cassette is inserted, the type of tape is automatically detected and the optimum bias current for recording and the optimum equalization setting for both recording and playback for the type of tape used is automatically set.

Quick-access operation
The TC-FX1010 can be instantly powered by pressing the ⏏ key or function keys which initiate the function directly without pressing the POWER key.

OPERATING VOLTAGE

Before connecting the unit to the power source, check that the operating voltage of your unit is the same as the local power line voltage.
The Continental European model (Type 1) operates on 220 V ac (or 240 V ac adjustable by authorized Sony personnel).
The United Kingdom model (Type 2) operates on 240 V ac (or 220 V ac adjustable by authorized Sony personnel).
The model for other countries (Type 3) operates on either 110, 120, 220 or 240 V ac. The voltage selector is located on the rear panel. If the selector must be reset, **disconnect the ac power cord** and turn the selector with a coin so that the arrow on the selector points to the appropriate voltage.



PRECAUTIONS

On safety

- Before operating the unit be sure that the operating voltage of your unit is identical with that of your local power supply.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

On installation

- Good air circulation is essential to prevent internal heat build-up in the unit. Place the unit in a location with sufficient air circulation.
- Do not install the unit near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust or mechanical vibration.
- Install the unit with the front panel facing toward you. Do not install the unit in an inclined position.

On head cleaning

The performance of your unit is dependent on the periodic cleaning of the heads and all surfaces over which the tape travels.
Dirty heads and a dirty tape path cause :

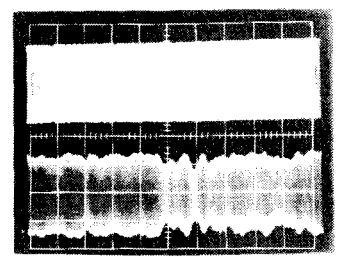
Loss of high frequency response
Loss of sound volume
Sound drop-outs

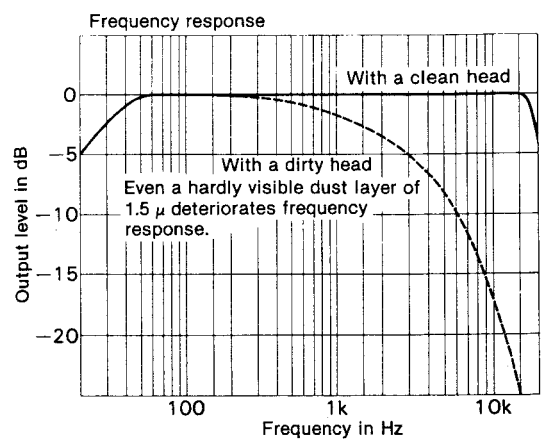
The heads and tape path should be cleaned after 10 hours of operation. For details, see "Maintenance" on page 17.

Playback waveform at 10 kHz

With a clean head

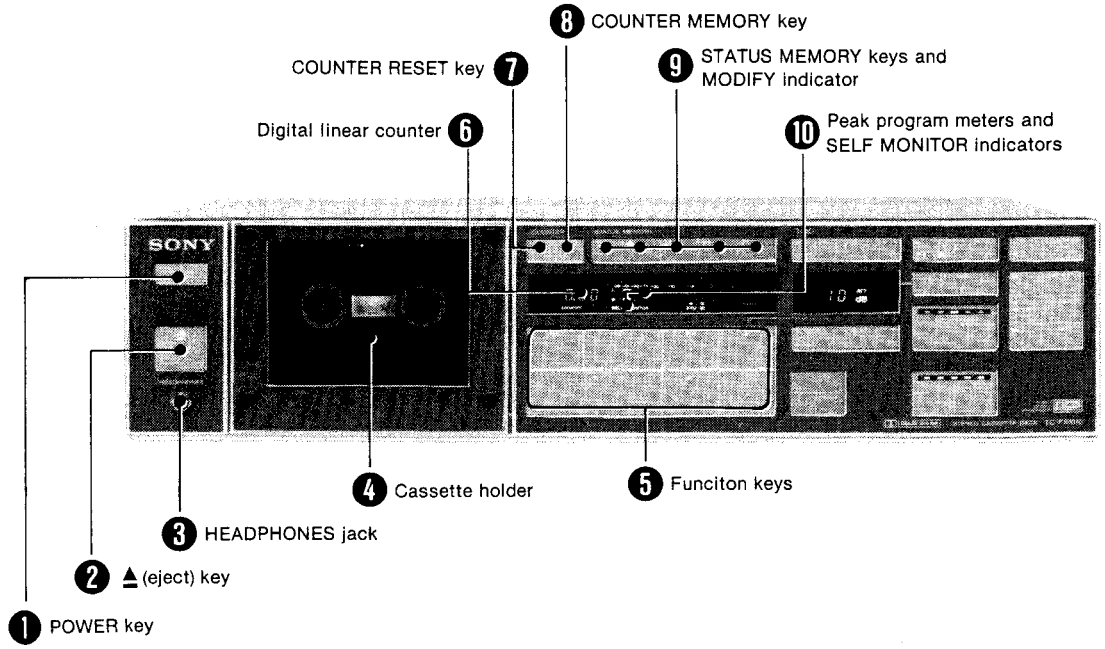
With a dirty head (The output level fluctuates.)





FUNCTION OF CONTROLS

The numbers in the photo are keyed to the following explanations.


8 COUNTER MEMORY key
COUNTER RESET key 7
9 STATUS MEMORY keys and MODIFY indicator
Digital linear counter 6
10 Peak program meters and SELF MONITOR indicators
SONY
4 Cassette holder
5 Funciton keys
3 HEADPHONES jack
2 ▲ (eject) key
1 POWER key

❶ POWER key
This turns the power on or off.

❷ ▲ (eject) key
Press this key to open the cassette holder.

❸ HEADPHONES jack
Headphones may be inserted either to monitor the input signals to be recorded or to listen to a recording in the playback mode.
Headphone volume is adjustable with the LINE OUT/HEADPHONES level control key.

❹ Cassette holder

❺ Function keys
It is possible to switch directly from one mode to another. The indicator lamp of other than ■ (stop) or ○ (REC MUTE) key will light up when it is pressed.

◀◀ (rewind) key: Press this key to rewind the tape.
▶ (forward) key: Press this key to play the tape back. To record, press this key and the ● key simultaneously.
▶▶ (fast-forward) key: Press this key to advance the tape rapidly.
● (record) key: Press this key together with the ▶ key to start recording. Also press this key before adjusting the recording level.
■ (stop) key: To stop the tape, press this key. The tape will stop automatically when it is completely wound up in either direction.
▮▮ (pause) key: To pause for a moment during recording or playback, press this key. This key is also used to control more precisely the start of recording and to release the record muting mode.
○ (record muting) key: Press this key to eliminate unwanted material and to insert a blank space during recording. See "Record muting" on page 15.

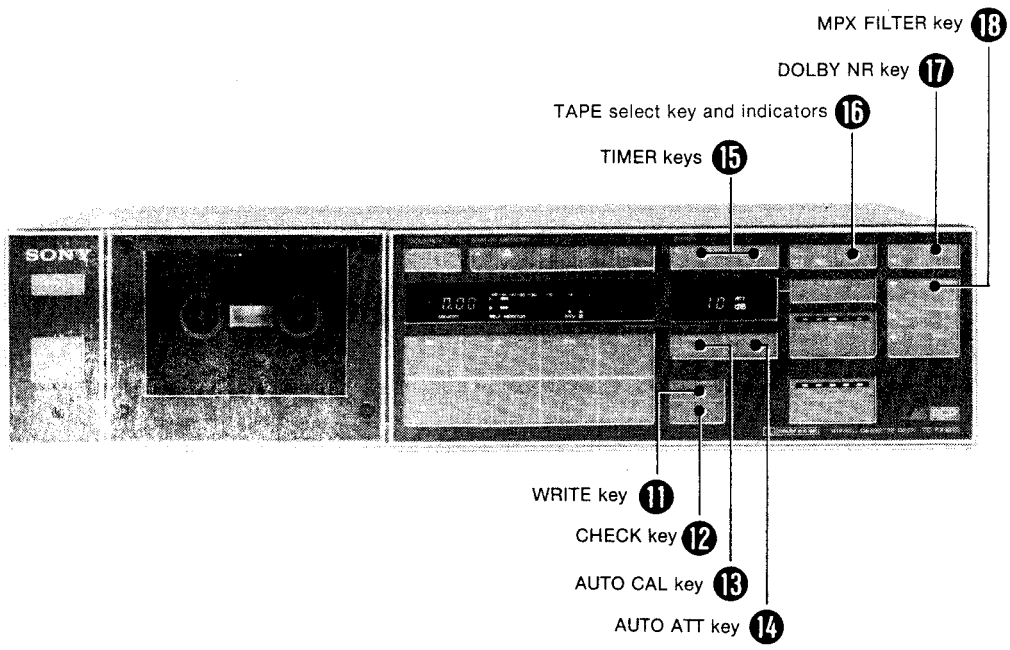
❻ Digital linear counter
This counter indicates the tape running time.
(Refer to "Using the digital linear counter" on page 14.)

❼ COUNTER RESET key
Press this key to set the counter to zero.

❽ COUNTER MEMORY key
Use the COUNTER MEMORY key to locate a particular point on the tape easily and quickly. Press the key to display the MEMORY indicator. The tape deck can be set to stop when the cassette is rewound to "–0.01" on the counter, and, if the ▶ and ◀◀ keys have also been pressed, set to begin playback automatically from that point. Press the key again to cancel it. See "Memory stop/play" on page 15.

❾ STATUS MEMORY keys and MODIFY indicator
The recording and playback settings as set by **the TAPE select key, the DOLBY NR key, the MPX FILTER key, the AUTO CAL key, the AUTO ATT key, the REC LEVEL control key, the REC BALANCE control key, the LINE OUT/HEADPHONES level control key, the BEEP key and the MOL BALANCE key** can be stored on the four STATUS MEMORY keys. Simply press the appropriate key to retrieve the desired setting. The pressed key will light.
When you have retrieved a particular setting with a STATUS MEMORY key, you can modify the recording and playback setting as necessary. When you do, the MODIFY indicator will light. To restore the setting on the STATUS MEMORY key, simply press the lightened STATUS MEMORY key. The MODIFY indicator will go out.

❿ Peak program meters and SELF MONITOR indicators
These meters show the peak input level of each channel during recording, and recorded levels in the playback mode. They follow the transient peaks of high-level inputs that are too brief to be followed by conventional VU meters so that the optimum recording level can be accurately set. For easy reading the highest input of each channel is held for about 4 seconds on the scale, except when a higher peak occurs before 4 seconds have passed, in which case that peak is immediately indicated.
The SELF MONITOR indicators will blink when the recording is distorted.



⓫ WRITE key
To store the optimum recording and playback settings in the STATUS MEMORY keys, first press this key and then one of the STATUS MEMORY keys.

⓬ CHECK key
To check the settings stored in the STATUS MEMORY keys, press this key. The settings will be displayed in sequence so that you can check them during the playback mode. This key doesn't operate during the recording mode.

⓭ AUTO CAL (automatic calibration) key
Press this key to automatically calibrate the bias and recording sensitivity for the tape being used to record. See page 20.

⓮ AUTO ATT (automatic attenuator) key
Press this key to automatically attenuate the preset recording level when the input level is too high, so that the recording will not be distorted. Press the key again to cancel the automatic attenuation. See page 21.

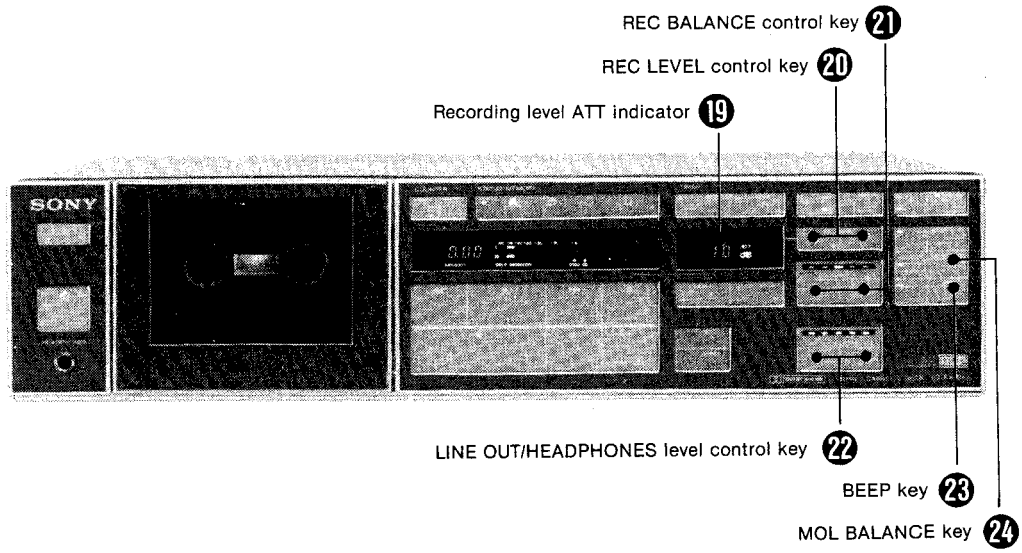
⓯ TIMER keys
You can set the unit to record or play back at a predetermined time by connecting any commercially available timer. To record, press the REC key. To play back, press the PLAY key. Each indicator illuminates. See "Timer-activated recording and playback" on page 16.

⓰ TAPE select key and indicators
When a cassette is inserted, the appropriate tape indicator lights up and the optimum recording and playback settings for the tape are automatically set by the automatic tape select system. Press this key if the indicator and the type of tape inserted are not the same. This key does not operate if a cassette has not been inserted. See page 9.

⓱ DOLBY NR key
Press this key to select the Dolby* NR system when recording or playing back. The type of Dolby NR system applied will change in the following sequence when the key is pressed: Dolby NR B type (B indicator illuminates), Dolby NR C type (C indicator illuminates), Dolby NR off (indicator off).
For details about the Dolby NR system, see page 20.

* "Dolby" and the double-D symbol are trade marks of the Dolby Laboratories. Noise reduction system manufactured under license from Dolby Laboratories.

⓲ MPX FILTER key
When recording FM stereo broadcasts with the Dolby NR system, press this key to ON (the indicator lights up) if the 19 kHz pilot signal and the 38 kHz subcarrier have not been adequately supressed by the FM tuner or receiver. If the tuner or the receiver supresses such signals adequately (most high-quality tuners and receivers will), you do not have to press this key to ON. Normally set the key so that the indicator is off.


REC BALANCE control key 21
REC LEVEL control key 20
Recording level ATT indicator 19
SONY
LINE OUT/HEADPHONES level control key 22
BEEP key 23
MOL BALANCE key 24

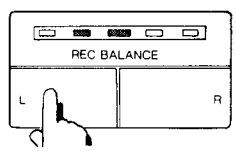
⑲ Recording level ATT (attenuation) indicator
The recording level set by the REC LEVEL key is indicated in dB. Note that the level is higher when the indicated number is smaller. For example: If the + side of the REC LEVEL key is kept depressed, the indicator will count down to 00 dB, at which point the recording level will be at the maximum. If the – side is pressed, the indicator will count up to□□dB, at which point the recording level will be at the minimum.

⑳ REC LEVEL (recording level) control key
Adjust the recording level by watching the peak program meters and the recording level ATT indicator. Press the + side to increase the level and the – side to decrease it.

㉑ REC BALANCE (recording level balance) control key
This controls the balance of the left and right channel recording levels.

Normal position of the indicator

If the right(R) channel level is too high, press the L side once.
The right channel level will lower.



If the right channel level is still too high, press the L side again.

The right channel level cannot be lowered further than this.

㉒ LINE OUT/HEADPHONES level control key
This key adjusts the output level of the LINE OUT jacks as well as the headphone level. At the "0" position, the rated output is obtained. Press the – side to reduce the output level by 2 dB. The level will change continuously if the key is kept pressed.

㉓ BEEP key
When this key is pressed, the indicator will light up and an alarm will sound when any key other than the function keys, the POWER key or the ▲ key is pressed. Press this key again to cancel this function.

㉔ MOL BALANCE key
This key is used to select one of the three MOL (Maximum Output Level) settings most appropriate for the type of program to be recorded. The indicator will change in the following sequence when the key is pressed: NORM—SHARP—NORM—SOFT—NORM.

SHARP: Recommended for recording programs with the high frequency range predominating as in jazz or synthesizer music.
NORM: For normal recording.
SOFT: Recommended for recording the program with the low frequency range predominating as in classical music.

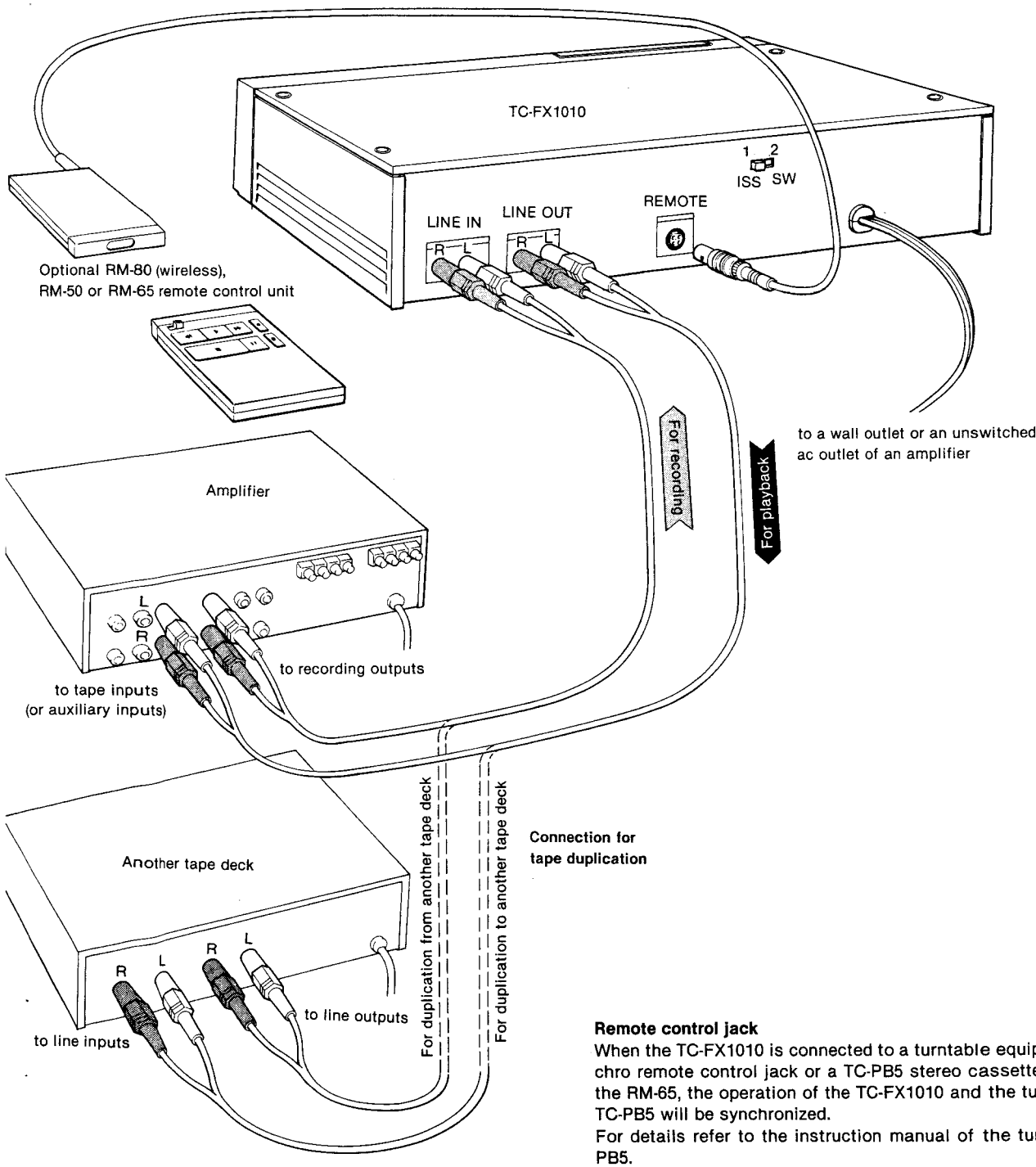
When the tape type is changed, the indicator will automatically return to NORM.

ISS (Interference suppress switch) (on the rear)
If interference is encountered while recording MW or LW program, use the ISS switch to suppress the interference. Slide the switch to 1 or 2 position, depending on which best reduces the noise.

CONNECTIONS

Notes

- Turn the amplifier off before making any connection.
- Be sure to insert the plugs firmly into the jacks. Loose connections may cause hum and noise.
- The red plug of the supplied connecting cord should be connected to the red jack (R : right channel) and the other plug to the white jack (L : left channel).



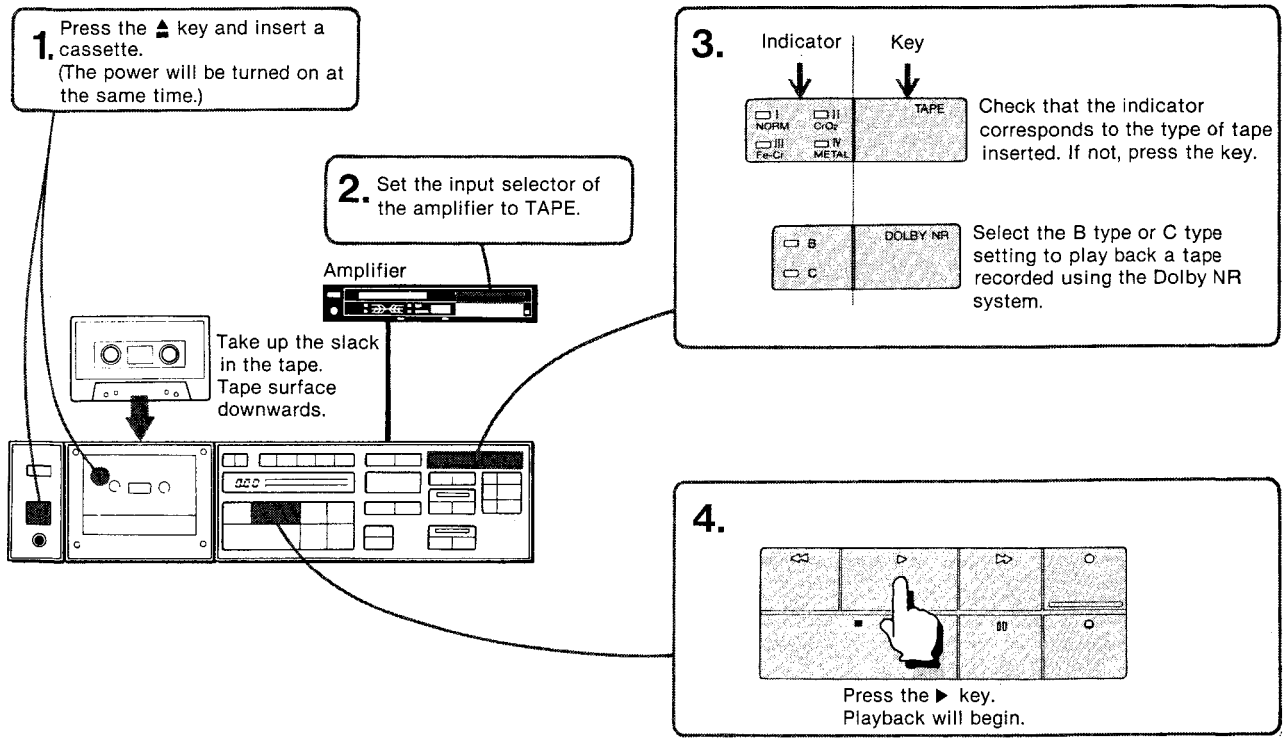
Remote control jack

When the TC-FX1010 is connected to a turntable equipped with synchro remote control jack or a TC-PB5 stereo cassette player using the RM-65, the operation of the TC-FX1010 and the turntable or the TC-PB5 will be synchronized.

For details refer to the instruction manual of the turntable or TC-PB5.

PLAYBACK

The numbers in this diagram indicate the sequence to be followed.


1. Press the ▲ key and insert a cassette.
(The power will be turned on at the same time.)
2. Set the input selector of the amplifier to TAPE.
Amplifier
Take up the slack in the tape.
Tape surface downwards.
3.
Indicator
Key
TAPE
Check that the indicator corresponds to the type of tape inserted. If not, press the key.
DOLBY NR
Select the B type or C type setting to play back a tape recorded using the Dolby NR system.
4.
Press the ▶ key.
Playback will begin.

Tape list

Tapes (C-60 and C-90)		TAPE
SONY : AHF, BHF MAXELL : UD, UD-XL I SCOTCH : MASTER I BASF : ferro super LH1	AGFA : SUPER FERRO DYNAMIC FUJI : FX-I PHILIPS : SUPER FERRO-I TDK : SD	TYPE I (NORMAL)
SONY : UCX-S, CD-α MAXELL : UD-XLII, XLII-S SCOTCH : MASTER II BASF : chromdioxid	AGFA : STEREO CHROM FUJI : FX-II PHILIPS : CHROMIUM TDK : SA, SA-X	TYPE II (CrO_2)
SONY : FeCr SCOTCH : MASTER III BASF : ferrochrom	AGFA : CARAT PHILIPS : FERRO CHROMIUM	TYPE III (Fe-Cr)
SONY : METALLIC	Other metal tapes	TYPE IV (METAL)

When turning on the power—

To turn the power on, you can press the POWER key, the ▲ key, the function keys, the COUNTER RESET key, the COUNTER MEMORY key or the STATUS MEMORY keys.

When the power is turned on, all indicators illuminate, the ■■ key blinks, and the recording level ATT indicator and the tape counter count down from 77 to 00 to indicate that the unit is in the standby mode.

The keys listed below will operate as soon as the unit leaves the standby mode.

Funciton keys (▶, ▶▶, ◀◀, ●), STATUS MEMORY keys, COUNTER RESET key

Note : Do not press the ● key and ▶ key during the standby mode to avoid starting the recording mode.

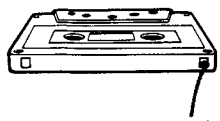
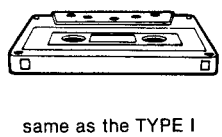
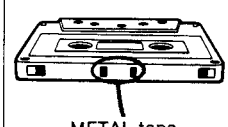
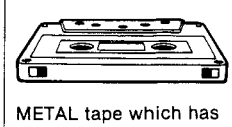
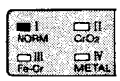
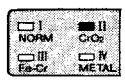
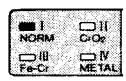
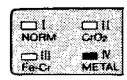
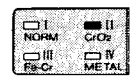
When turning the power off—

Press the POWER key to turn the power off.

The power will also be turned off automatically if the unit is left for about 60 minutes in the stop mode.

AUTOMATIC TAPE SELECT SYSTEM

When a cassette is inserted, this automatic tape select system is actuated by the cassette's arrangement of detector slots and automatically sets the optimum recording and playback settings.

	TYPE I (NORMAL) cassette	TYPE II (CrO_2) cassette	TYPE III (Fe-Cr) cassette	TYPE IV (METAL) cassette	
Tape detector slots	 the tab	CrO_2 tape detector slots	 same as the TYPE I cassette	 METAL tape detector slots	 METAL tape which has no METAL tape detector slots
TAPE indicator					

As shown in the above illustration, TYPE I, II and IV cassette tapes will be detected automatically.

Exception to the automatic tape select system

- When inserting TYPE III or TYPE IV cassettes which have no METAL tape detector slots, the correct TAPE indicator does not light up and the automatic tape select system cannot work properly. In this case, press the TAPE key so that the correct TAPE indicator lights up.
- If the TAPE indicator is TYPE III or TYPE IV and the TYPE I or II cassette is inserted, press the TAPE key so that the indicator will be correct.

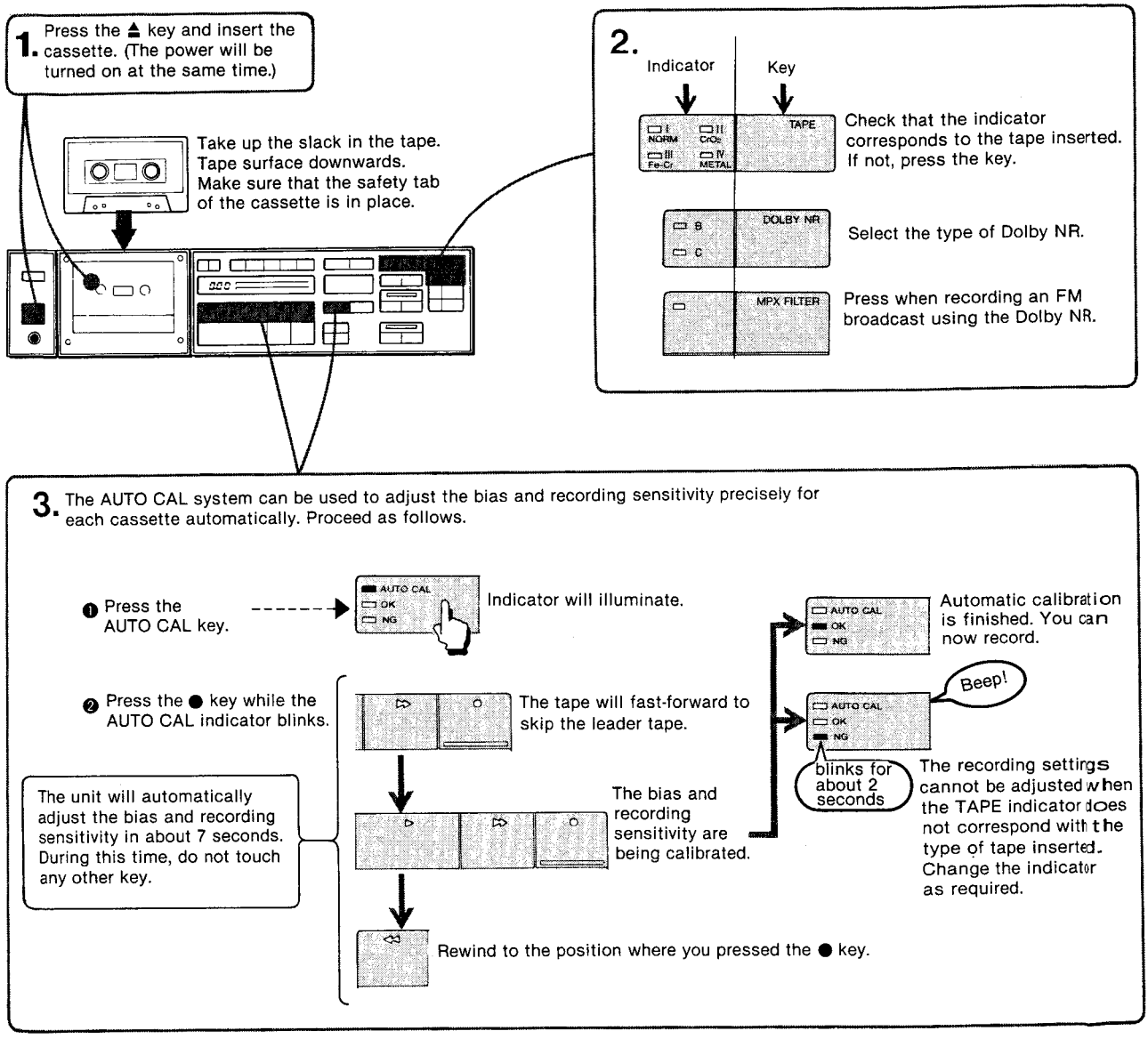
Note

We do not recommend using TYPE IV cassettes without METAL and CrO_2 tape detector slots.

RECORDING

BEFORE RECORDING

The numbers in this diagram indicate the sequence to be followed.

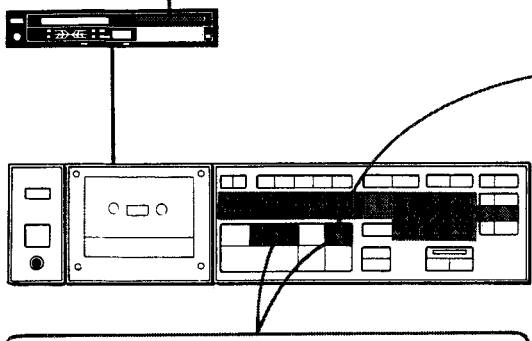

1. Press the ▲ key and insert the cassette. (The power will be turned on at the same time.)
Take up the slack in the tape.
Tape surface downwards.
Make sure that the safety tab of the cassette is in place.
2.
Indicator
Key
I NORM
II CrO2
III Fe-Cr
IV METAL
TAPE
Check that the indicator corresponds to the tape inserted. If not, press the key.
B
C
DOLBY NR
Select the type of Dolby NR.
MPX FILTER
Press when recording an FM broadcast using the Dolby NR.
3. The AUTO CAL system can be used to adjust the bias and recording sensitivity precisely for each cassette automatically. Proceed as follows.
❶ Press the AUTO CAL key.
AUTO CAL
OK
NG
Indicator will illuminate.
❷ Press the ● key while the AUTO CAL indicator blinks.
The tape will fast-forward to skip the leader tape.
The unit will automatically adjust the bias and recording sensitivity in about 7 seconds. During this time, do not touch any other key.
The bias and recording sensitivity are being calibrated.
Rewind to the position where you pressed the ● key.
Automatic calibration is finished. You can now record.
Beep!
blinks for about 2 seconds
The recording settings cannot be adjusted when the TAPE indicator does not correspond with the type of tape inserted. Change the indicator as required.

Notes on the AUTO CAL operation

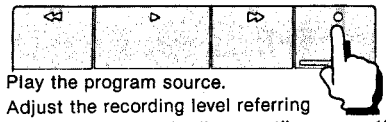
- The OK indicator and the adjusted settings will be cancelled if the tape type is changed after the AUTO CAL operation.
- Even if the NG indicator does blink, you can record with the inserted tape, because the approximate settings are adjusted by the automatic tape select system. Note that 120-minute tapes and certain metal tapes are apt to be NG. Always use tape of good quality.

TO START RECORDING

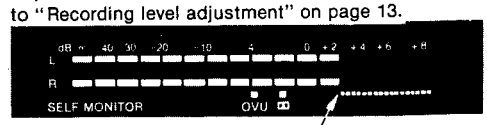
1. Set the input selector of the amplifier to the desired program source.



2. Press the ● key.

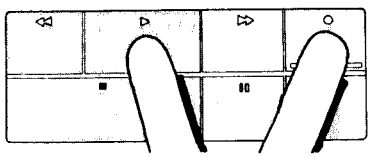


3. Play the program source.
Adjust the recording level referring to "Recording level adjustment" on page 13.



Adjust the REC LEVEL control key so that the meters deflect only left end of the red line at the highest signal level. For details, see "Recording level adjustment" on page 13.
Adjust the left and right channel balance with the REC BALANCE key.

4. Press the ▶ and ● keys simultaneously.



MORE ACCURATE RECORDING STARTS

You can use the ▮▮ (pause) key to start recording more accurately than is possible when recording is started by pressing both the ● (record) key and the ▶ (forward) key. Before adjusting the recording level, press the ▮▮ key, then put the tape deck in the record mode by pressing the ● and ▶ keys simultaneously, instead of pressing only the ● key as in step 2. In this way, you can start recording exactly where you want by pressing only the ▮▮ key.

TO RECORD MATERIAL ONTO A SPECIFIC PORTION OF TAPE

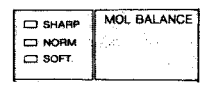
When you want to re-record a specific portion of tape or to insert new material between two points on a tape you will find it handy to be able to change directly from the playback to the record mode by pressing the ● key and the ▶ key simultaneously.

USEFUL KEYS FOR BETTER RECORDING

AUTO ATT key

Set this key to on after adjusting the recording level to attenuate the excessive input to the proper level so that the recording will not be distorted. See page 21.

MOL BALANCE key



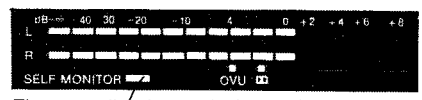
MOL characteristics can be selected according to the source sound.
For normal recording—NORM
For recording high-frequency range programs (ex. jazz or synthesizer music)—SHARP
For recording low-frequency range programs (ex. classical music)—SOFT

Change the MOL BALANCE settings after the tape type is set and the AUTO CAL operation is finished.

SELF MONITOR

As this tape deck has separate record and playback heads, the unit will automatically compare the source with the recorded sounds in the recording mode. If there is a difference in the sound levels, the SELF MONITOR indicators will blink to indicate that the heads are contaminated and should be cleaned or the recording level setting is too high.

- Only the source sound can be monitored during recording.
- Note that the red and white indicators will always blink on the leader tape.



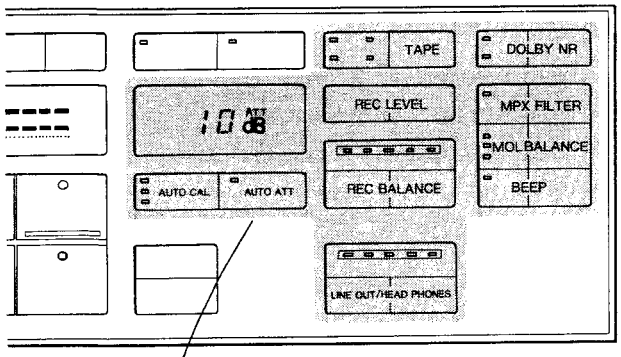
The recording is good when only the white indicator blinks occasionally.

The recording is not good when both the white and red indicators blink. An alarm will sound when the red indicator blinks. Check that the head is not contaminated or that the recording level setting is not too high.

RECORDING AND PLAYBACK USING THE STATUS MEMORY FUNCTION

The TC-FX1010 can store and retrieve recording and playback settings. Once a setting has been stored on a STATUS MEMORY key, you can retrieve it by pressing the key.

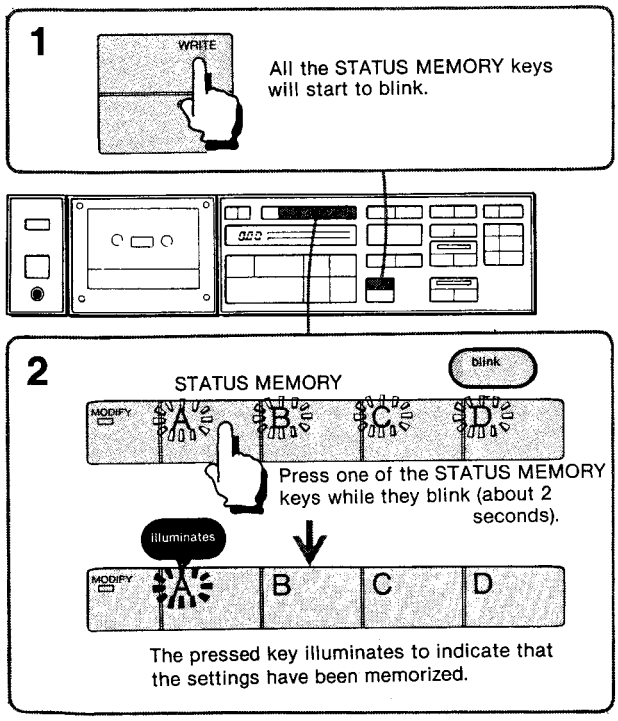
WHICH KEYS CAN BE STORED?



The settings of these ten keys can be stored.

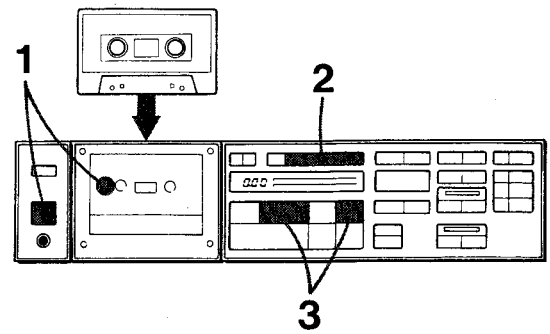
TO STORE THE SETTINGS

Adjust the settings to store in the STATUS MEMORY key before entering them into the status memory. Once the settings are committed to memory, they cannot be cancelled or adjusted until new settings are stored on the STATUS MEMORY key.



TO RECORD OR PLAYBACK USING THE STATUS MEMORY KEYS

❶ Press the ⏏ key and insert a cassette.
❷ Press a STATUS MEMORY key.
❸ Start recording or playback.



TO CHANGE SOME OF THE SETTINGS MEMORIZED ON A KEY

For example : To change some of the settings stored on the B key

❶ Press the B key to recall the settings.
❷ Change the settings you want.
→ The MODIFY indicator will illuminate.

> **MODIFY indicator**
> This indicator illuminates to show that the some of the settings of the STATUS MEMORY key have been changed. The indicator illuminates till the STATUS MEMORY key is pressed again.

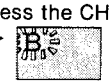
To recall the original settings, press the B key again.
To store the newly-adjusted settings, press the WRITE key and one of the STATUS MEMORY keys.

TO CHECK THE STORED SETTINGS

Once the settings have been memorized, you can check them by pressing the CHECK key. The check can be made during the stop and playback mode.

❶ Press the CHECK key. →

The A key will blink for about 3 seconds and the settings of the keys memorized on the A key will illuminate.

❷ Press the CHECK key again while the A key indicator blinks.
→ 

The B key will blink and the settings of the keys memorized on the B key will illuminate.

In this way, you can check settings memorized on the A, B, C and D keys in order.

- The settings illuminated during the check will automatically return to the original settings.
- Note that the CHECK key doesn't operate in the recording mode.

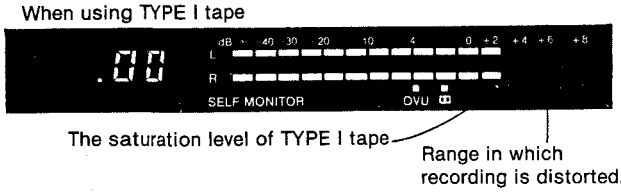
Note on the memory back-up circuit

The memorized settings will not be cancelled even when the power goes off for several months so you can retrieve them whenever you want. This is because the unit has a battery-powered back-up circuit which permits you to move the unit from one place to another or to operate it after a blackout. If the power cord is disconnected for a long time, however, the memorized settings will be cancelled. In this case, connect the power cord to charge the battery.

RECORDING LEVEL ADJUSTMENT

Adjust the recording level while monitoring on the peak program meters the input level of the program source to be recorded. If the recording level setting is too high, the recording will be distorted, and if the setting is too low, the recording will be noisy. The recording level should be set as high as possible while still avoiding distortion. This level will depend on the type of tape being used.
When the tape type is set, the range above the saturation level of the selected type of tape is indicated by the red line. Generally speaking, adjust the recording level by making sure that the meters deflect only to the left end of the red line at the highest signal level.

When using TYPE I tape



The saturation level of TYPE I tape

Range in which recording is distorted.

Since the saturation level of any tape is lower in the higher frequencies than in the lower frequencies, the recording level may still be too high if adjusted in this way if the program to be recorded contains many high frequency signals. Consideration has to be given to the program source to be recorded as well as to the characteristics of the cassette to be used, since each cassette, even cassettes using the same type of tape, may have different characteristics.

Setting the recording level using the AUTO ATT key
Play the program source in the recording standby mode. Set the recording level a little higher than the saturation level on the peak program meter. Then set the AUTO ATT key on. When signals at an excessive are input, the AUTO ATT function automatically attenuates the recording level to the proper level. In this way, the optimum recording level according to the tape type can be set to start recording.

USING THE DIGITAL LINEAR COUNTER

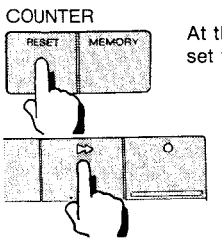
The first two digits of this tape counter show the approximate recording or playback time in minutes, and the last two digits show the seconds.

To index the whole tape

Before recording or playback, set the counter to "0.00" by pressing the COUNTER RESET key.

As the tape runs, the figures of the counter change. Note the numbers and the program being recorded or played back. Any point of the tape can thus be readily located later by reference to these numbers.

To check the available recording time on one side of a cassette

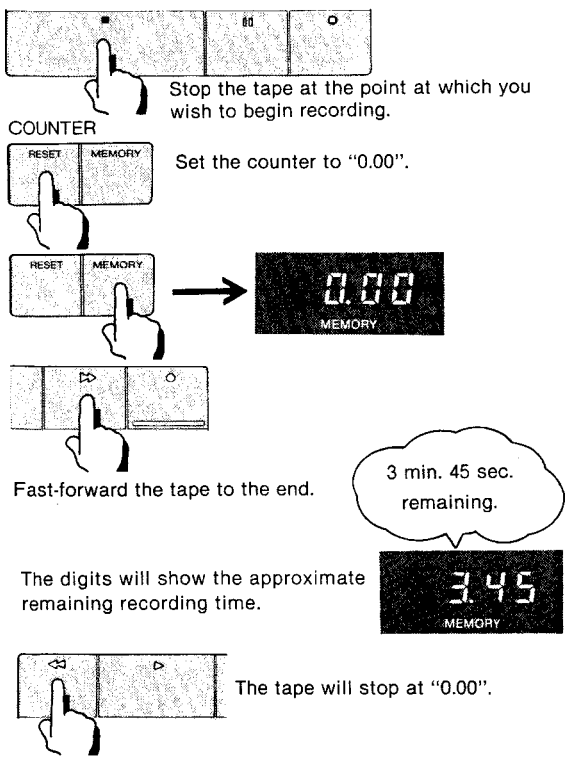


At the beginning of the tape, set the counter to "0.00".

Fast-forward the tape to the end.

The digits will show the approximate available recording time.

To determine the remaining recording time



Stop the tape at the point at which you wish to begin recording.

Set the counter to "0.00".

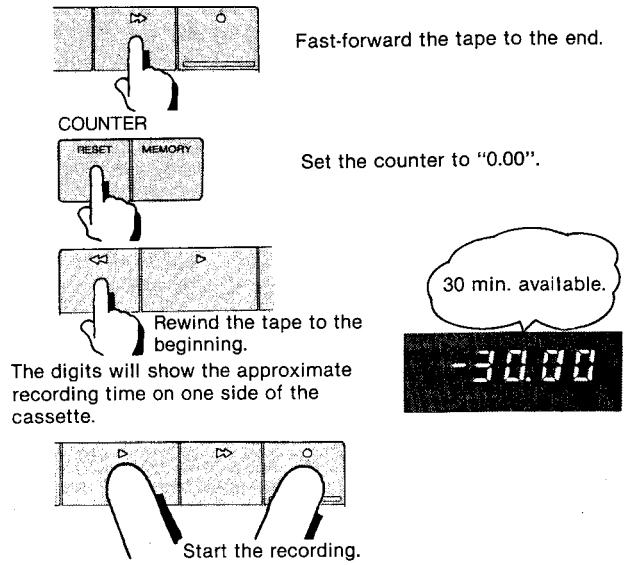
Fast-forward the tape to the end.

The digits will show the approximate remaining recording time.

The tape will stop at "0.00".

To monitor the remaining recording time while recording —Using the minus display

The counter shows the recording or playback time from the "0.00" point preceded by a minus sign when the tape is rewound beyond "0.00".



Fast-forward the tape to the end.

Set the counter to "0.00".

Rewind the tape to the beginning.

The digits will show the approximate recording time on one side of the cassette.

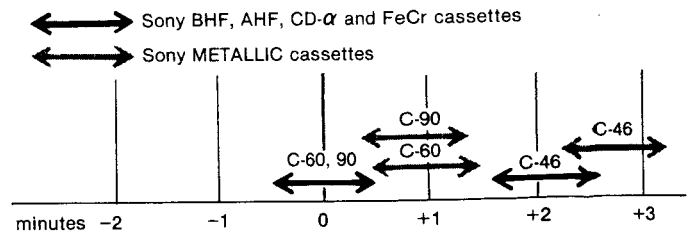
Start the recording.

The digits will change from −30.00 to −29.59, −29.58... as the recording goes on, and you can monitor the remaining recording time at any point on the tape.

The accuracy of the counter

This counter is not actually a digital clock, so that the displayed figures are not exactly equal to the actual elapsed time. The accuracy will vary depending on the type of tape being used. This counter has been designed using C-60 cassettes as the standard. Make sure that the displayed time is greater than the time required when using a C-46 cassette.

Difference between the counter indication and the actual tape running time on one side of a cassette

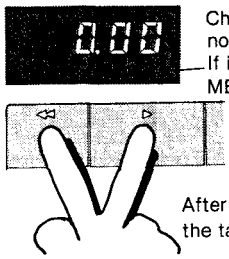


The counter indication is less than the actual tape running time.

The counter indication is more than the actual tape running time.

AUTO PLAY

To rewind the tape and play from the beginning of the tape, use the auto play function. The tape deck can automatically replay a tape immediately after rewinding.



Check that the MEMORY indicator is not displayed below the tape counter. If it is displayed, press the COUNTER MEMORY key.

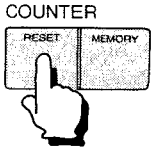
Press the ◀◀ key and the ▶ key simultaneously.

After the tape is completely rewound, the tape will automatically replay.

MEMORY STOP/PLAY

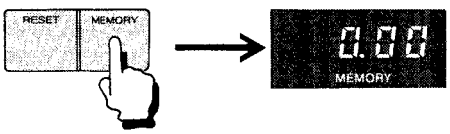
To rewind the tape to a desired point use the memory stop function. To play from a desired point use the memory play function. You can easily locate any particular point on a tape.

1. COUNTER



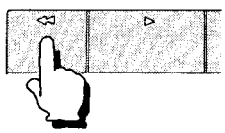
At the desired point on the tape, press the COUNTER RESET key to set the tape counter to "0.00."

2.



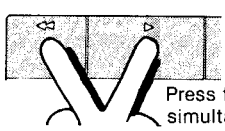
3. When rewinding the tape,

Memory stop



The tape stops automatically when it is rewound to the "–0.01" point.

Memory play



The tape replays automatically after rewinding to the "–0.01" point.

Press the ◀◀ and ▶ keys simultaneously.

Why does the tape stop around "–0.01"?
In order to avoid any chance of cutting off the starting point.

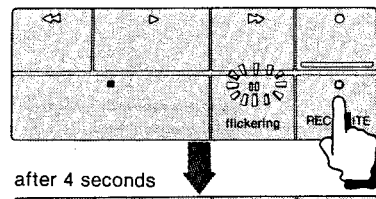
How can the tape be rewound further than "0.00"?
Press the ◀◀ key again.

RECORD MUTING

By pressing the O (record muting) key during recording, four seconds interspacing is provided automatically, eliminating unwanted program material such as broadcasting commercials. While the record muting is operating, the incoming signal is not recorded on the tape but it continues to register on the meters and feed to the monitor so that you know exactly what is going on.

To insert a 4-second blank automatically

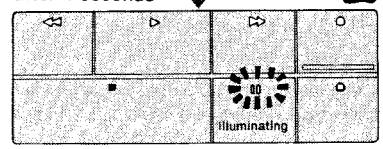
When the segment you do not wish to record begins,



A blank is made while the tape continues to run.

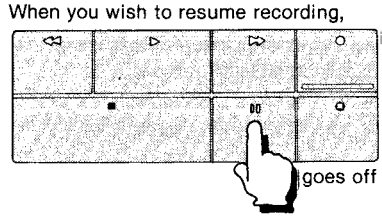
Press.
(Do not keep pressing.)

after 4 seconds



The tape pauses.

When you wish to resume recording,



The tape starts to run.

goes off

To insert a blank less than four seconds long
Press the O key to mute recording. Press the ■■ key when you want to resume recording.

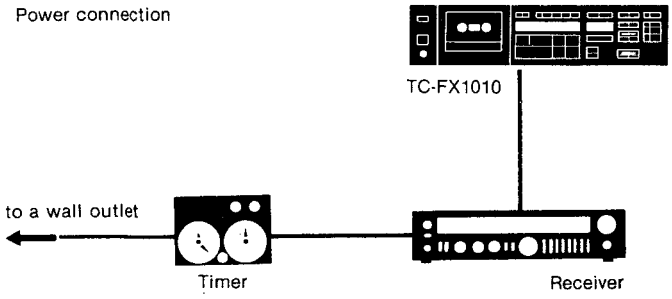
To insert a blank over four seconds long
Hold down the O key for as long as you want the blank segment on the tape to be. After four seconds, the indicator of the O key will blink more rapidly. When you release the ■■ key, the tape deck will be in the pause mode. When you want to resume recording, press the ■■ key to release the pause mode.

ERASING

When the tape deck functions in recording mode, the erase head automatically erases any previously recorded material.
To erase without recording :
❶ Make sure that the safety tab of the cassette is in place, or that the tab slot is covered with plastic tape.
❷ Check that the appropriate tape type is indicated.
❸ Keep pressed the — key of the REC LEVEL control. (Disconnecting all inputs will result in a more complete erasure.)
❹ Press the ● key and the ▶ key simultaneously.

TIMER-ACTIVATED RECORDING AND PLAYBACK

By connecting any commercially available timer to the tape deck, the deck can be set to play back or record automatically at any desired time. As timers work in different ways, be sure to read the timer's instruction manual carefully.



To record a broadcast using a timer

❶ Connect the tape deck, receiver and timer. Set the timer so that power is supplied to the connected equipment.
❷ Turn on the receiver and tune in the station which will broadcast the program you want to record.
❸ Turn on the tape deck and insert a cassette. Make sure that the tab is intact or that plastic tape covers the tab slot.
❹ Adjust the settings before recording and the recording level. (Press the appropriate A to D key when using the STATUS MEMORY key.).
❺ Press the TIMER REC key of the tape deck.
❻ Set the timer for the desired time. (At this point power to the connected equipment will be cut off.)
The tape deck is now ready to start recording at the time set on the timer.

To play back using a timer

The connections between equipment are the same as for recording using a timer.
❶ Turn on the receiver and set the appropriate switches for playback.
❷ Turn on the tape deck and insert the recorded cassette.
❸ Press the TIMER PLAY key of the tape deck.
❹ Set the timer for the desired time. (At this point power to the connected equipment will be cut off.)
The tape deck is now ready to start playback at the time set on the timer.

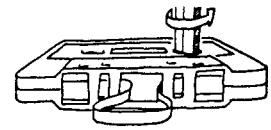
Notes

- Keep the power switches of the equipment to operate to ON. During the standby mode, the recording level ATT indicator and the tape counter will be as follows :
  In the timer-activated recording, 0 0 will blink.
  In the timer-activated playback, P P will blink.
- Be sure that the tab of the cassette is intact when recording using a timer.
- When the timer function is not used for a long period of time, set the timer so that the power is always supplied to the tape deck.

NOTES ON CASSETTES

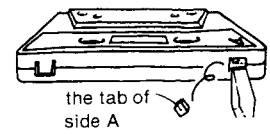
Cassette insertion

Before inserting a cassette, take up any slack in the tape to prevent it from becoming tangled around the capstan.

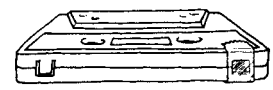


To protect cassettes from accidental erasure

Remove the tab as illustrated so that the record mode does not function when the ●(record) key is pressed.

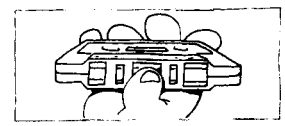


To record on a cassette once tabs have been removed, simply cover the slot with plastic tape.

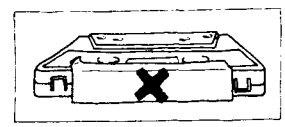


Cassette care

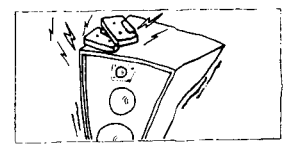
- Avoid touching the tape surface of a cassette, as any dirt or dust will contaminate the heads.



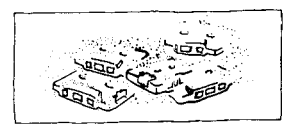
- Do not stick thick labels or tape on the cassette, as this may affect proper cassette alignment and prevent the tape from making proper contact with the heads.



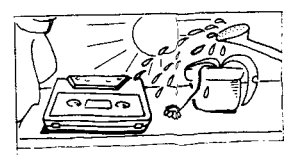
- Keep cassettes away from equipment with magnets, such as speakers and amplifiers, because their magnets could cause erasures or distortions of your recorded tapes.



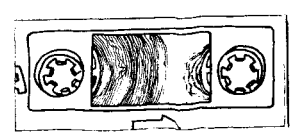
- Protect cassettes from dust by storing them in their cases. Even minor dirt or dust could contaminate the heads, resulting in noise and sound drop-outs.



- Do not expose cassettes to direct sunlight, extremely cold temperature or moisture.



- Avoid fast-winding just before storing cassettes, as this may stretch the tape edge if the cassettes are left unused over a period of time.

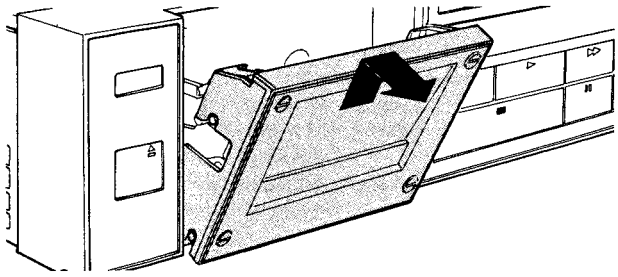


MAINTENANCE

Cleaning of heads and tape path

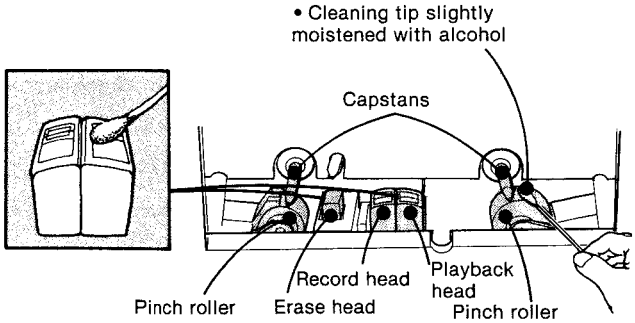
We recommend cleaning after every 10 hours of operation. To make the best possible recordings, however, you should clean all surfaces over which the tape travels before every recording.

❶ Press the ⏏ key to open the cassette holder. Remove the window as illustrated.

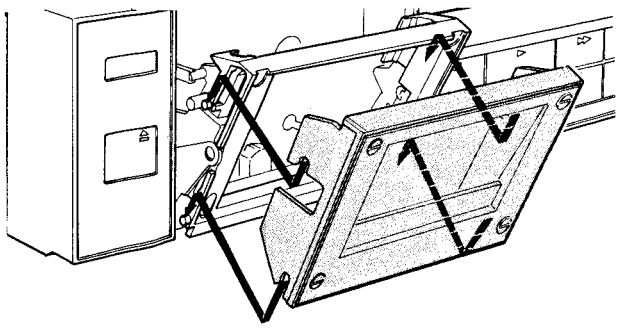


❷ Push the frame in.

❸ Wipe the heads, the pinch rollers and the capstans with a cleaning tip slightly moistened with cleaning fluid or alcohol.



❹ Press the ⏏ key to open the frame, and replace the window.



●After cleaning the heads and tape path, do not insert a cassette until the areas cleaned are completely dry.

Demagnetizing heads

After 20 to 30 hours of use, enough residual magnetism will have built up on the heads to begin to cause loss of high frequencies and hiss. At this time you should demagnetize the heads and all metal parts in the tape path with a commercially available head demagnetizer. Be sure that the tape deck is turned off while you demagnetize.

Cleaning the cabinet

Clean the cabinet, panel and controls with a soft cloth lightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

SPECIFICATIONS

Recording system 4-track 2-channel stereo
Fast-forward and rewind time
Approx. 80 sec. (with C-60 cassette)
Bias frequency 105 kHz
Signal-to-noise ratio (NAB, at peak level)

Cassette / Dolby NR key	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METALLIC)	60 dB	67 dB	73 dB
TYPE III (Sony FeCr)	61 dB	68 dB	74 dB
TYPE II (Sony CD-α)	57 dB	64 dB	70 dB
TYPE I (Sony BHF)	56 dB	63 dB	69 dB

Total harmonic distortion
0.8% (with Sony METALLIC and FeCr cassettes)
Frequency response DOLBY NR OFF
- With TYPE IV cassette (Sony METALLIC)
  20 - 20,000 Hz
  25 - 18,000 Hz (±3 dB)
  25 - 13,000 Hz (±3 dB, 0 VU recording)
  25 - 18,000 Hz (DIN)
- With TYPE III cassette (Sony FeCr)
  20 - 20,000 Hz
  25 - 18,000 Hz (±3 dB)
  25 - 18,000 Hz (DIN)
- With TYPE II cassette (Sony CD-α)
  20 - 19,000 Hz
  25 - 17,000 Hz (±3 dB)
  25 - 17,000 Hz (DIN)
- With TYPE I cassette (Sony BHF)
  20 - 18,000 Hz
  25 - 16,000 Hz (DIN)

Wow and flutter 0.04% WRMS (NAB)
±0.12% (DIN)
Inputs Line inputs (phono jacks)
Sensitivity 77.5 mV (−20 dB)
Input impedance 50 k ohms
Outputs Line outputs (phono jacks)
Máximum output level 0.435 V (−5 dB)
at a load impedance of 50 k ohms
with LINE OUT level control at "0"
Variable in sixteen steps from −5 dB to −35 dB
Load impedance over 10 k ohms
Headphone output
Output level variable in sixteen steps from −20 dB to −50 dB at a load impedance of 8 ohms

General

Power requirements Type 1 : 220 V ac, 50/60 Hz
(240 V ac adjustable by authorized Sony personnel)
Type 2 : 240 V ac, 50/60 Hz
(220 V ac adjustable by authorized Sony personnel)
Type 3 : 110, 120, 220 or 240 V ac adjustable, 50/60 Hz
Power consumption Type 1 and 2 : 38 watts
Type 3 : 49 watts
Dimensions Approx. 430 × 105 × 330 mm (w/h/d)
(17 × 4¼ × 13 inches)
including projecting parts and controls
Weight Approx. 8.1 kg (17 lbs 14 oz)
Supplied accessories
Connecting cord 2
Head cleaning tips ..... 1 set

While the information given is correct at the time of printing, small production changes in the course of our company's policy of improvement through research and design might not necessarily be indicated in the specifications. We would ask you to check with your appointed Sony dealer if clarification on any point is required.

Note

Appliance conforms with EEC Directive 76/889 regarding interference suppression.

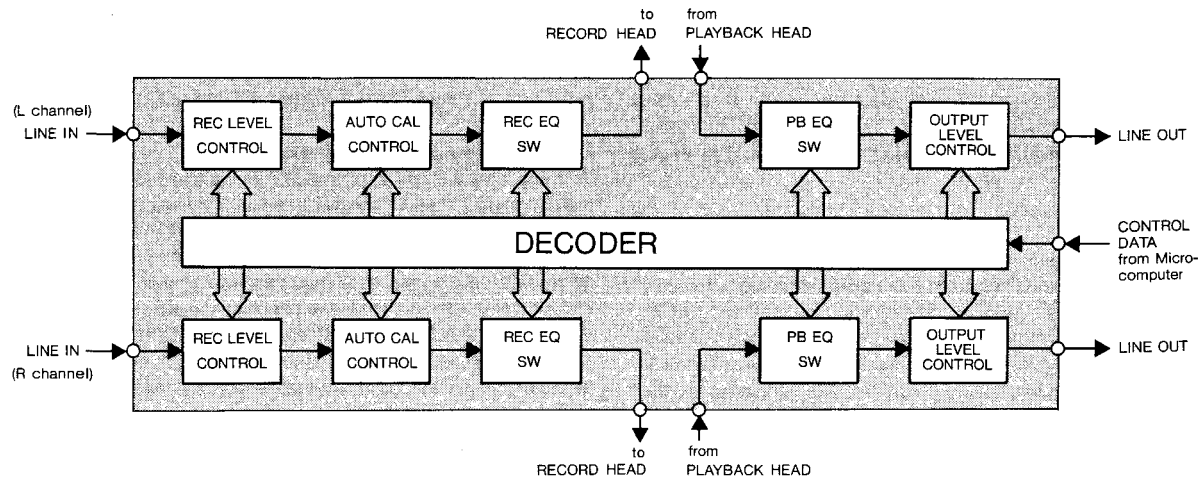
TECHNICAL INFORMATION

ASP (Audio Signal Processor) IC

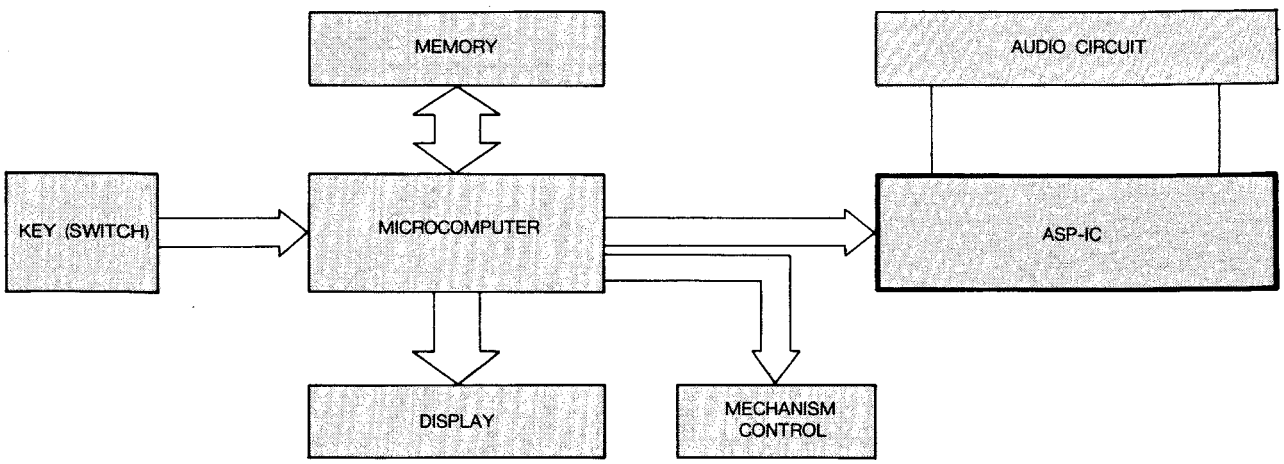
Sony has developed a new IC, called an ASP IC, which can control all the functions of the TC-FX1010 and which greatly simplifies and shortens the signal path. This new IC makes it possible to eliminate all mechanical controls and switches from the front panel.

The ASP IC, in conjunction with the TC-FX1010's built-in microcomputer, offers more useful and easy-to-operate funcitons than ever before—status memory function, auto calibration, auto recording level attenuation, etc.

ASP IC block diagram



System control diagram



DOLBY NR (NOISE REDUCTION) SYSTEM

There have been until recently just two types of Dolby NR system: the A-type for professional use, and the B-type, a simplified version of the A-type, employed by most consumer-grade cassette decks. Now, a third type of Dolby NR system is available, the C-type. The C-type system reduces tape noise much more effectively than the B-type system.

The basis of the Dolby NR system

During recording, low-level high-frequency signals, which tend to be obscured by tape hiss, are boosted so that they are substantially higher in level than any tape noise. When these signals are played back, the level is lowered to the original input level, while simultaneously the level of any tape noise is reduced to the same extent.

The Dolby B-type NR system thus reduces tape noise by 10 dB at 5 kHz. The C-type system reduces noise by 20 dB at 5 kHz. The Dolby C-type NR system also begins to take effect at frequencies lower than the B-type system.

Anti-saturation network

Normally, recording tape will saturate more easily at the higher frequencies. The Dolby C-type NR system incorporates a high frequency anti-saturation network. During recording, the anti-saturation network automatically reduces high-level high-frequency signals. When these signals are played back, the level is automatically boosted to the original input level. At 10 kHz, the tendency of the tape to saturate is reduced by 4 dB by the use of this network.

Playback of Dolby NR encoded tapes

For the best sound, lowest distortion, and most effective noise reduction, it is essential that a tape recorded using either the B-type or the C-type Dolby NR system be played back using the same system that was used during the recording process. We recommend that you label the cassettes you record as being either non-Dolby NR, Dolby B NR, or Dolby C NR.

Fig. 1 Encoding characteristics

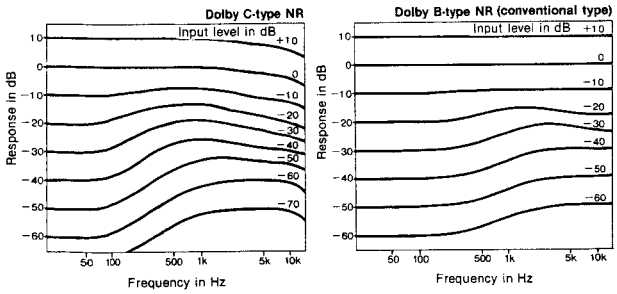


Fig. 2 Noise improvement

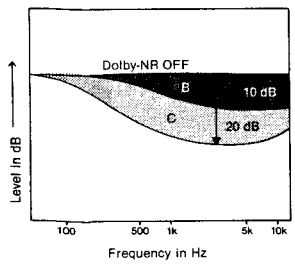
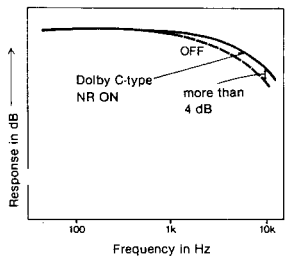


Fig. 3 Saturation level improvement



AUTOMATIC CALIBRATION

The TC-FX1010's auto tape select system detects the type of cassette tape inserted and selects the recording settings appropriate for that type of tape. This is useful since the recording characteristics of a type II tape, for example, of one manufacturer may be significantly different from those of another manufacturer. The automatic calibration system works as follows :

Bias calibration

To obtain the widest possible frequency response, the automatic calibration system first adjusts the bias current. Normally, too high a bias level gives a rolled-off high-frequency response, and too little bias reduces the signal-to-noise ratio and increases distortion. The automatic calibration system first records 8 kHz and 400 Hz test tones, then plays them back, adjusting the bias current so that the playback levels of the 8 kHz and 400 Hz test tones are the same.

Recording sensitivity calibration

If the sensitivity of the tape being used is different from the sensitivity of the tape which was used to adjust the unit at the factory, the playback level may differ from the recording level. The automatic calibration system compensates for any difference in sensitivity by adjusting the recording and playback level of a 400 Hz test tone so that the recording and playback levels are the same. This precise calibration of the recording sensitivity serves to optimize the performance of the Dolby NR system, which is most effective when the recording and playback levels are the same.

The setting of the keys during automatic calibration

When you begin automatic calibration, the setting of the following keys on the front panel will cange to :

REC LEVEL : 10 dB ATT REC BALANCE : center DOLBY NR : OFF

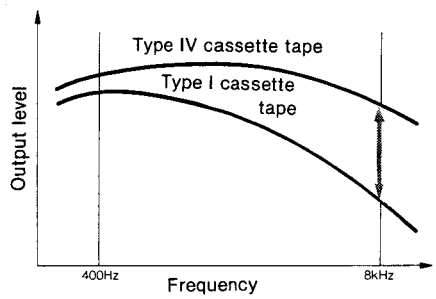
MPX FILTER : OFF MOL BALANCE : NORM

When calibration is finished, all keys except for the MOL BALANCE key will return to their previous setting.

AUTOMATIC RECORDING LEVEL ATTENUATION

When the AUTO ATT key is set to ON, the TC-FX1010 attenuates the recording level if an input level higher than the MOL (Maximum Output Level) that comes in during recording. The MOL varies with type of tape and the frequency range. The MOL of a type I cassette in the high-frequency range, for example, is much lower than the MOL of a type IV cassette in the high-frequency range, as is shown in the figures below.

MOL change with frequency



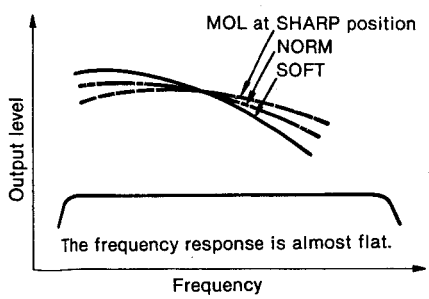
The TC-FX1010 stores in its memory the standard MOL of each of the four types of tape in the high-frequency range and low-frequency range. During recording, the input signals are divided into high- or low-frequncy range and their level is compared with the memorized MOL. If their level exceeds the MOL, the automatic attenuator lowers the recording level. After the recording level has been lowered, it does not return to the original level.

MOL BALANCE

Using the auto tape select system and the auto calibration system, the optimum recording settings for standard program sources can be obtained. The MOL BALANCE key permits you to adjust the recording settings to suit particular program sources.
The MOL BALANCE key sets the MOL by adjusting the bias current. To maintain a flat frequency response the recording equalization characteristics are adjusted simultaneously. The MOL BALANCE key has the following 3 positions.

NORM: Normal setting.
SHARP: The bias level is lowered, so the MOL in the high-frequency range is raised. This setting is appropriate for recording high-frequency range programs, such as jazz or synthesizer music.
SOFT: The bias level is raised, so the MOL in the low-frequency range is raised. This setting is appropriate for recording low-frequency range programs, such as classical music.

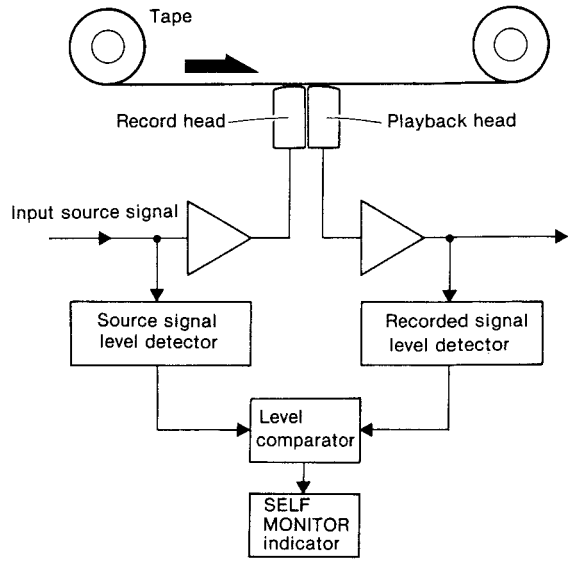
Since there is no fixed rule for setting the MOL BALANCE key, set it to the position that seems right for your listening conditions.



SELF MONITOR SYSTEM

The TC-FX1010 compares the levels of the input source signal and the recorded signal during recording. The SELF MONITOR indicator flickers to warn if the recorded signal level is lower than the source signal level, a situation which can be caused by a contaminated head or saturation of the tape.

- If the difference between source signal level and the recorded signal level is more than 3 dB..... the white indicator flickers.
- If the difference is more than 6 dB..... the white and red indicators flicker.



TROUBLE CHECKS

The following trouble checks will help you correct the most common problems encountered with a tape deck. Should any problem persist after you have made these checks, consult your nearest Sony service facility.
Before proceeding with these trouble checks, first check these basic points:
- The power cord must be firmly connected.
- Amplifier connections must be firmly made.
- Heads, capstans and pinch rollers should be clean.
- The amplifier controls and switches should be set correctly.

FUNCTION KEYS AND TAPE TRANSPORT PROBLEMS

The function keys do not activate right after the power is turned on.
- Logic-controlled function keys operate approximately 4 seconds after the power is turned on.
- No cassette in the holder.
- The cassette holder is not fully closed.

The ● key does not activate.
- The tab has been removed from the cassette.

The automatic shut-off mechanism activates before the end of the tape.
- The tape is slack.
- The COUNTER MEMORY key is set to on.
- This situation may also be caused by a deformed cassette shell.

Tape transport noise seems excessively loud in rewind or fast-forward mode.
- This situation depends upon the cassette used and not a problem.

RECORDING AND PLAYBACK PROBLEMS

Recording or playback cannot be made or there is a decrease in sound level.
- Contamination or magnetic build-up on the record/playback heads.
- Improper connection.
- Improper setting of the amplifier controls.

Recording or playback using a timer cannot be made.
- Built-in battery for memory back-up is discharged. See page 12.

Excessive wow or flutter or drop out
- Contamination of the capstans or pinch rollers.

Incomplete erasure
- Contamination of the erase head.

Increase of noise or erasure of high frequencies
- Magnetic build-up on the heads.

Unbalanced tone in higher frequencies
- Improper setting of the DOLBY NR key. When playing back, set the key to the same position used in recording.
- The tape to be used and the TAPE indicator is not the same.

The indicator does not light up even the AUTO CAL key is pressed.
- No cassette in the holder.
- A function key other than the ■ (stop) key is pressed.
- The tab has been removed from the cassette.

The AUTO CAL is cancelled during operation.
- The automatic shut-off mechanism is activated.
- The function key, CHECK key or POWER key is pressed during operation.

OTHERS

The power is turned off automatically.
- The set has not been operated in the stop mode for one hour.

The REC and PLAY indicators of the TIMER keys are both illuminated.
- Built-in battery for memory back-up is discharged. See page 12.

Hum noise
- The tape deck is stacked on or under the amplifier. Relocate it.